

DOCUMENT-IDENTIFIER: US 6317495 B1

TITLE: Spectral optimization and joint signaling techniques with multi-line separation for communication in the presence of crosstalk

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DEPR:

Determining the channel transfer function in step 210 of FIG. 9 may be done by directly measuring it. For example, a transmitter on one end of the communications channel, such as at CO 12 (in FIG. 1) or in well-logging instrumentation 18 (in FIG. 1A), may be directed to send a signal or a series of signals with predetermined intensities as a function of frequency, with which the a receiver at the other end of the channel may measure the attenuation, and perhaps also the phase shift, as a function of frequency. The measurement may be extended to determine nonlinear responses of the channel by repeating the measurement with varying source strengths. Alternately, the channel characteristics may be determined in advance of the communication and stored, for example in a database at the CO or in a memory on a DSL card. Determining the channel transfer function could then entail receiving it from the CO, the local memory storage, or other storage locations. In the case where the invention is used in a subscriber line system, receiving the channel transfer function from the CO is particularly useful since the CO may rapidly look up pre-stored information on the particular physical line being used for the communications channel.

| L Number | Hits | Search Text | DB | Time stamp |
|----------|---------|--|-------|------------------|
| 1 | 757995 | (single or one) adj end\$2 | USPAT | 2002/06/19 14:20 |
| 2 | 1243058 | test\$3 or measur\$5 | USPAT | 2002/06/19 14:13 |
| 3 | 37407 | ((single or one) adj end\$2) same (test\$3 or measur\$5) | USPAT | 2002/06/19 14:14 |
| 4 | 10 | ((single or one) adj end\$2) same (test\$3 or measur\$5)) same (\$1dsl) | USPAT | 2002/06/19 14:14 |
| 5 | 757995 | ((single or one) adj end\$2) or (single-end\$2 or one-end\$2) | USPAT | 2002/06/19 14:24 |
| 6 | 17 | ((single or one) adj end\$2) same (test\$3 or measur\$5)) same (\$4qualif\$8) | USPAT | 2002/06/19 14:47 |
| 7 | 17 | ((single or one) adj end\$2) same (test\$3 or measur\$5)) same (qualif\$8 or prequalifi\$8 or pre-qualifi\$8) | USPAT | 2002/06/19 14:48 |
| 8 | 431 | ((single or one) adj end\$2) same (test\$3 or measur\$5)) and (qualif\$8 or prequalifi\$8 or pre-qualifi\$8) | USPAT | 2002/06/19 14:48 |
| 9 | 60207 | ((single or one) adj end\$2) same (test\$3 or measur\$5)) and (qualif\$8 or prequalifi\$8 or pre-qualifi\$8)) and 379/1.01-35.ccls. or 324/\$.ccls. | USPAT | 2002/06/19 14:50 |
| 10 | 40 | ((single or one) adj end\$2) same (test\$3 or measur\$5)) and (qualif\$8 or prequalifi\$8 or pre-qualifi\$8)) and (379/1.01-35.ccls. or 324/\$.ccls.) | USPAT | 2002/06/19 14:51 |

| L Number | Hits | Search Text | DB | Time stamp |
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| 1 | 757995 | (single or one) adj end\$2 | USPAT | 2002/06/19 14:20 |
| 2 | 1243058 | test\$3 or measur\$5 | USPAT | 2002/06/19 14:13 |
| 3 | 37407 | ((single or one) adj end\$2) same (test\$3 or measur\$5) | USPAT | 2002/06/19 14:14 |
| 4 | 10 | ((single or one) adj end\$2) same (test\$3 or measur\$5)) same (\$1dsl) | USPAT | 2002/06/19 14:14 |
| 5 | 757995 | ((single or one) adj end\$2) or (single-end\$2 or one-end\$2) | USPAT | 2002/06/19 14:24 |
| 6 | 17 | ((single or one) adj end\$2) same (test\$3 or measur\$5)) same (\$4qualif\$8) | USPAT | 2002/06/19 14:47 |
| 7 | 17 | ((single or one) adj end\$2) same (test\$3 or measur\$5)) same (qualif\$8 or prequalifi\$8 or pre-qualifi\$8) | USPAT | 2002/06/19 14:48 |
| 8 | 431 | ((single or one) adj end\$2) same (test\$3 or measur\$5)) and (qualif\$8 or prequalifi\$8 or pre-qualifi\$8) | USPAT | 2002/06/19 14:48 |
| 9 | 60207 | ((single or one) adj end\$2) same (test\$3 or measur\$5)) and (qualif\$8 or prequalifi\$8 or pre-qualifi\$8)) and 379/1.01-35.ccls. or 324/\$.ccls. | USPAT | 2002/06/19 14:50 |
| 10 | 40 | ((single or one) adj end\$2) same (test\$3 or measur\$5)) and (qualif\$8 or prequalifi\$8 or pre-qualifi\$8)) and (379/1.01-35.ccls. or 324/\$.ccls.) | USPAT | 2002/06/19 15:29 |
| 11 | 5 | ((single or one) adj end\$2) same (test\$3 or measur\$5)) and (qualif\$8 or prequalifi\$8 or pre-qualifi\$8)) and (379/1.01-35.ccls. or 324/\$.ccls.) and (bridge\$1 adj tap) | USPAT | 2002/06/19 15:39 |

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|----------|--------|---|-------|------------------|
| 1 | 383276 | (proxy or adjacent or next or bundle) same (line or loop) | USPAT | 2002/06/19 16:08 |
| 2 | 128225 | (predict\$ or assum\$8 or estimat\$4) same (rate or speed) | USPAT | 2002/06/19 16:10 |
| 3 | 3277 | ((proxy or adjacent or next or bundle) same (line or loop)) same ((predict\$ or assum\$8 or estimat\$4) same (rate or speed)) | USPAT | 2002/06/19 16:11 |
| 4 | 881 | ((((proxy or adjacent or next or bundle) same (line or loop)) same ((predict\$ or assum\$8 or estimat\$4) same (rate or speed)))) same (data or \$1dsl) | USPAT | 2002/06/19 16:11 |
| 5 | 181 | (((((proxy or adjacent or next or bundle) same (line or loop)) same ((predict\$ or assum\$8 or estimat\$4) same (rate or speed)))) same (data or \$1dsl)) same (test\$3 or measur\$6) | USPAT | 2002/06/19 16:13 |
| 6 | 159 | ((((((proxy or adjacent or next or bundle) same (line or loop)) same ((predict\$ or assum\$8 or estimat\$4) same (rate or speed)))) same (data or \$1dsl)) same (test\$3 or measur\$6)) and @ay<=1997 | USPAT | 2002/06/19 16:14 |
| 7 | 9 | ((((((((proxy or adjacent or next or bundle) same (line or loop)) same ((predict\$ or assum\$8 or estimat\$4) same (rate or speed)))) same (data or \$1dsl)) same (test\$3 or measur\$6)) and @ay<=1997) and (379/1.01-35.ccls. or 324/\$.ccls.) | USPAT | 2002/06/19 16:15 |